

## **Historic, Archive Document**

Do not assume content reflects current scientific knowledge, policies, or practices.





United States  
Department of  
Agriculture

Soil  
Conservation  
Service

Boise,  
Idaho



# Idaho Water Supply Outlook

June 1, 1987



DEC 27 1987

USDA LIBRARY

# Foreword

## How Forecasts Are Made

Most of the annual streamflow in the Western United States originates as snowfall. This snowfall accumulates high in the mountains during winter and early spring. As the snowpack accumulates, hydrologists estimate the runoff that will occur when it melts. Predictions are based on careful measurements of snow water equivalent at selected index points. Precipitation, temperature, soil moisture and antecedent streamflow data are viewed in conjunction with snowpack data to prepare runoff forecasts. This report presents a comprehensive picture of water supply outlook conditions for areas dependent upon surface runoff. It includes selected streamflow forecasts, summarized snowpack and precipitation data, reservoir storage data and narratives describing current conditions.

Streamflow forecasts are cooperatively generated by Soil Conservation Service and National Weather Service hydrologists. Forecasts become more accurate as more data affecting runoff becomes known. For this reason, forecasts are issued that reflect three future precipitation conditions — Below Normal, Average, and Above Normal. These forecasts are termed reasonable minimum, most probable, and reasonable maximum. Actual streamflow can be expected to fall between the lower and upper forecast values eight out of ten years.

Snowpack data are obtained by using a combination of manual and automated measurement methods. Manual readings of snow depth and water equivalent are taken at locations called snow courses on a monthly or semi-monthly schedule during the winter. In addition, snow water equivalent, precipitation, temperature, and other parameters are monitored on a daily basis and transmitted via radio telemetry to central data collection facilities. Both monthly and daily data are used to project snowmelt runoff.

## For More Information

Copies of Monthly Water Supply Outlook Reports and other reports may be obtained from the states listed below. Because of the limited space, snow survey measurements are not published in monthly reports. An annual snow survey data summary is published by the Soil Conservation Service for each of the western states. Historical snow survey data may be obtained at those same offices.

STATE	ADDRESS
Alaska	201 East 9th Ave., Suite 300, Anchorage, AK 99501-3687
Arizona	201 East Indianola, Suite 200, Phoenix, AZ 85012
Colorado	2490 West 26th Ave., Denver, CO 80211
New Mexico	517 Gold Ave. S.W., Room 3301, Albuquerque, NM 97102
Idaho	304 North 8th Street, Room 345, Boise, ID 83702
Montana	10 East Babcock, Room 443, Federal Building, Bozeman, MT 59715
Nevada	1201 Terminal Way, Room 219, Reno, NV 89502
Oregon	1220 Southwest 3rd Ave., Room 1640, Portland, OR 97208
Utah	4402 Federal Building, 125 South State Street, Salt Lake City, UT 84147
Washington	360 U.S. Court House, Spokane, WA 99201
Wyoming	Federal Building, 100 East "B" Street, Casper, WY 82601

In addition to state reports, a Water Supply Outlook for the Western United States is published by the Soil Conservation Service and National Weather Service monthly, January through May. Reports may be obtained from the Soil Conservation Service, West National Technical Center, 511 Northwest Broadway, Room 547, Portland, OR 97209.

Published by other agencies:

Water Supply Outlook Reports prepared by other agencies include: California — Snow Survey Branch, California Department of Water Resources, P.O. Box 388, Sacramento, CA 95802; British Columbia — The Ministry of Environment, Water Investigations Branch, Parliament Buildings, Victoria, British Columbia, V8V 1X5; Yukon Territory — Department of Indian and Northern Affairs, Northern Operations Branch, 200 Range Road, Whitehorse, Yukon Territory, Y1A 3V1; Alberta, Environment Technical Services Division, 9820 106th St., Edmonton, Alberta T5K 2J6.

# Idaho Water Supply Outlook

and

## Federal — State — Private Cooperative Snow Surveys

### **Issued by**

Wilson Scaling  
Chief  
Soil Conservation Service  
Washington, D.C.

### **Released by**

Stanley N. Hobson  
State Conservationist  
Soil Conservation Service  
Boise, Idaho

### **Prepared by**

Gerald A. Beard  
Data Collection Office Supervisor  
Soil Conservation Service  
Rm. 345, 304 N. 8th Street  
Boise, Idaho 83702

### **In cooperation with**

A. Kenneth Dunn  
Director  
State of Idaho  
Department of Water Resources  
Boise, Idaho



## NOTICE TO SUBSCRIBERS:

This publication is distributed monthly January to June each year as a public service by the USDA, SCS. In order to control the cost of this publication and ensure maximum use of the information provided, we are required to examine our circulation annually. You were recently sent a subscription notice for the 1988 publication which must be completed and returned to us within 30 days or your name will be removed from our mailing list. If you have any questions or did not receive the subscription notice and wish to remain on our mailing list, contact this office within 30 days at (208) 334-1614 or write:

Soil Conservation Service  
Snow Surveys  
304 N. 8th Street, Room 345  
Boise, ID 83702

## GENERAL OUTLOOK

### SUMMARY:

ABOVE TO WELL ABOVE NORMAL PRECIPITATION THE LAST HALF OF MAY PROVIDED TEMPORARY RELIEF TO MUCH OF THE DROUGHT STRICKEN AREAS IN SOUTHERN IDAHO, BUT DID NOT SIGNIFICANTLY IMPROVE THE SUMMER WATER SUPPLY OUTLOOK AND IMPENDING WATER SHORTAGE SITUATION. SNOWPACKS ACROSS SOUTHERN IDAHO WERE NEARLY DEPLETED BY MID-MAY AND CURRENT STREAMFLOW CONDITIONS ARE WELL BELOW NORMAL. RESERVOIRS ARE NOW BEING DRAFTED TO MEET IRRIGATION DEMANDS AND MANY ARE EXPECTED TO BE VERY LOW OR EMPTY BY LATE SUMMER. WELL TIMED AND ABOVE AVERAGE PRECIPITATION WILL BE NEEDED FOR THE REMAINDER OF THE SEASON TO AVOID CRITICAL WATER SHORTAGES IN SOME AREAS OF CENTRAL AND SOUTHWESTERN IDAHO.

### SNOWPACK:

Above average temperatures and well below normal precipitation the first half of May depleted most of the remaining snowpack across southern Idaho. Only three snow courses in southern Idaho reported any snowpack remaining by May 15. Snow measurements normally taken near June 1 in the southern half of the state were cancelled since virtually the entire snowpack had melted by this date. In northern Idaho, most snowpacks below the 6,000 ft. elevation are now depleted. Measurements taken at stations above this elevation reported snowpacks ranging from only 15 to 35% of normal as of June 1. The remaining snowpack in north Idaho is expected to be depleted by mid-June.

### PRECIPITATION:

Warm and dry weather conditions the first half of May gave way to cooler temperatures and much needed rainfall over much of Idaho the last half of the month. Northern Idaho received the lowest amounts of rain, with totals ranging from 40 to 80% of normal. Central Idaho stations generally reported above to well above average amounts, but the range was from a low of 70% at McCall to 240% at Ketchum. Southwestern Idaho precipitation amounts ranged from 60 to 140% of normal. Rainfall in the eastern and southeastern part of the state was well above average, with many stations reporting more than twice their normal amount of precipitation. Mountain precipitation as reported by SNOTEL followed a similar pattern, ranging from 62% of normal in the Clearwater Basin to 235% in the Great Basin. Temperatures fluctuated widely during May, but the state averaged above normal temperatures for the month.

## RESERVOIRS:

Twenty-three key reservoirs across the state report a combined storage of 107% of average and 89% of capacity. Current storages range from 56% of average in Arrowrock Reservoir to 134% in Mackay Reservoir. Reservoirs in northern Idaho and on the Upper Snake River mainstem show the best storage volumes as of June 1. Well below normal May streamflows and increased irrigation demands resulted in most reservoirs reaching their maximum storage level for the season in early May. Few reservoirs are currently filled to capacity, and many reservoirs in central and southwestern Idaho show a net decrease in storage since May 1. Typically, most reservoirs would be filled to capacity in late May or early June as streams reached their peak flows and begin to recede. Many reservoirs in southwestern Idaho will be empty or nearly empty by late summer. June 1 reservoir storage levels can be found on page 12 of this report.

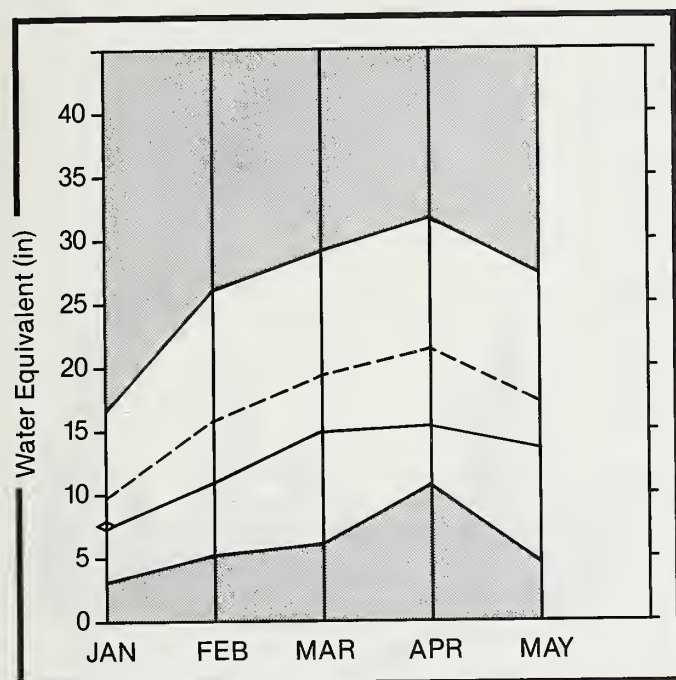
## STREAMFLOW:

Most streams reached peak flow conditions the last week of April and first week of May as the last of the snowpack in the major water producing zones was depleted. In normal years, the major rivers reach peak flow conditions in late May or early June. The early and much lower than normal peak flows resulted in most streams across southern Idaho reporting less than 50% of their normal May flow. Northern Idaho streamflows held up somewhat better, but remained well below normal for May. Heavy precipitation across much of southern Idaho the last half of May helped replenish deficit soil moisture conditions, but provided little surface runoff. Some areas in southern and eastern Idaho, however, did experience flash flood situations as a result of short duration - high intensity rainfall. The improved soil moisture conditions will help maintain higher baseflow conditions for a short period of time until soils begin to dry out. Streamflows for the remainder of the season are expected to be well below normal over most of the state. Well timed and above normal precipitation is needed to avoid critical water shortages in areas of central and southwestern Idaho.



# Upper Columbia Basin

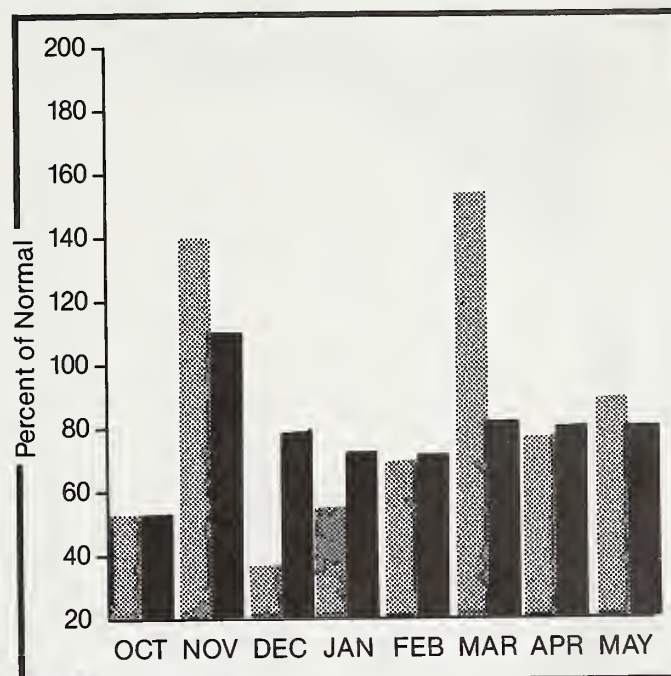
**Mountain snowpack\* (inches)**





\*Based on selected stations

Maximum  Average   
Minimum  Current 

**Precipitation\* (percent of normal)**



\*Based on selected stations

Monthly precipitation  Year to date precipitation 

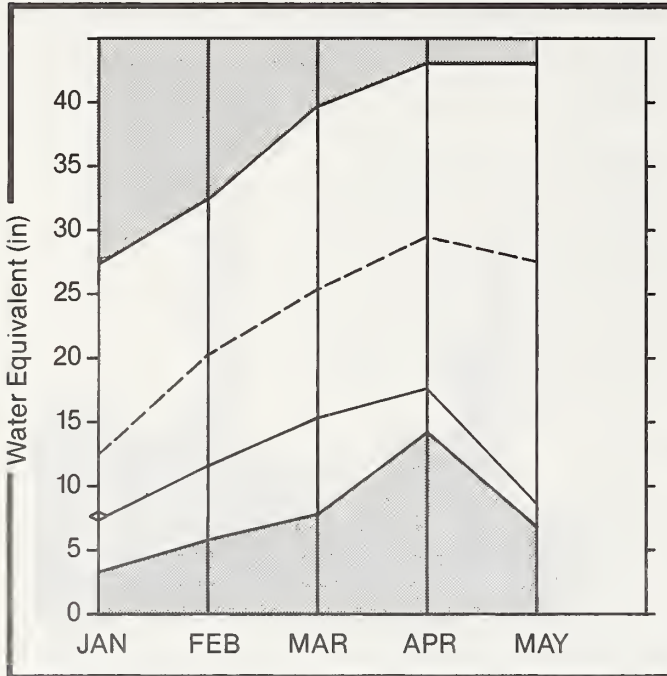
## WATER SUPPLY OUTLOOK:

The winter snowpack is now nearly depleted. As of June 1, only a few high elevation sites report any remaining snow cover, but these areas report only 30 to 40% of normal snow water content. Rainfall during May was below normal with mountain stations reporting 60 to 80% of normal precipitation and valley stations reporting 65 to 112%. Streams reached their peak flow conditions about 4 weeks earlier than normal with most streams peaking the last week of April and first week of May. Streamflows the remainder of the season will remain well below normal unless much above average late spring and summer precipitation falls over the basin.





For more information contact your local Soil Conservation Service office.

# Clearwater and Salmon River Basin

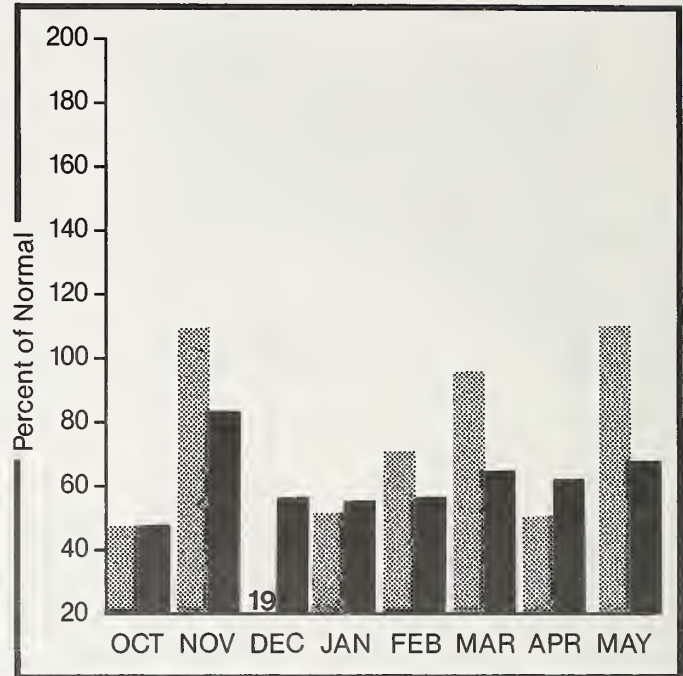
**Mountain snowpack\* (inches)**





\*Based on selected stations

Maximum  Average   
Minimum  Current 

**Precipitation\* (percent of normal)**



\*Based on selected stations

Monthly precipitation  Year to date precipitation 

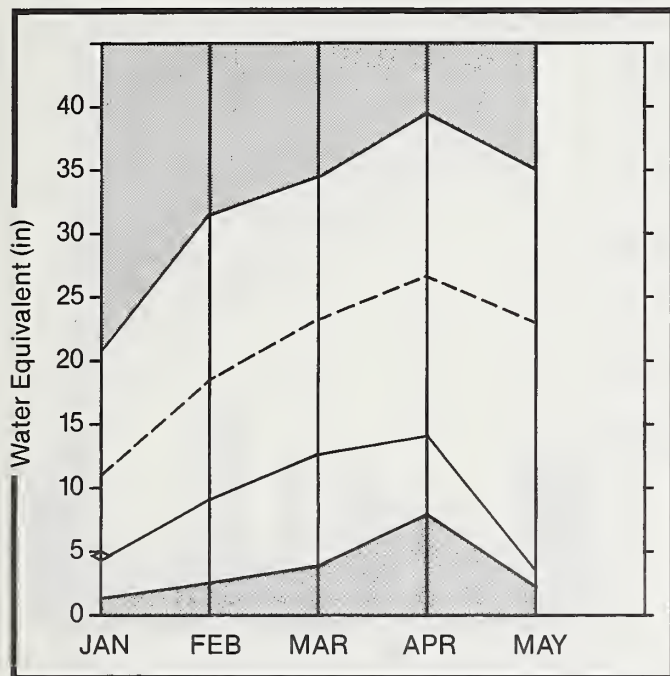
## WATER SUPPLY OUTLOOK:

On the Clearwater drainage, only limited amounts of snow remain on north facing slopes and in protected areas above the 6,000 ft. level. Snow measurements at selected sites above this elevation report 15 to 30% of normal snowpack. Snowpacks on the Salmon drainage are virtually depleted with no stations reporting any snowcover. May precipitation was below to well below average on the Clearwater basin and above to well above average over much of the Salmon basin. Mountain SNOTEL precipitation stations on the Clearwater reported 50 to 60% of normal rainfall, while stations on the Salmon reported 150 to 165% of normal. Valley precipitation ranged from 80 to 115% on the Clearwater and 74 to 233 on the Salmon. Streamflows peaked in both basins near May 1 and well below normal flows are expected for the remainder of the season.

For more information contact your local Soil Conservation Service office.

# Weiser, Payette, and Boise River Basin

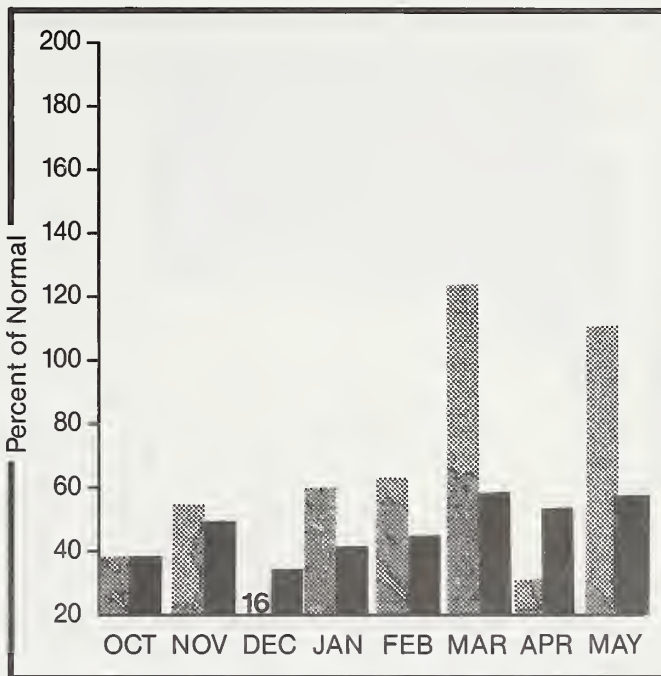
**Mountain snowpack\*** (inches)



\*Based on selected stations

Maximum Average   
 Minimum Current

**Precipitation\*** (percent of normal)



\*Based on selected stations

Monthly precipitation Year to date precipitation

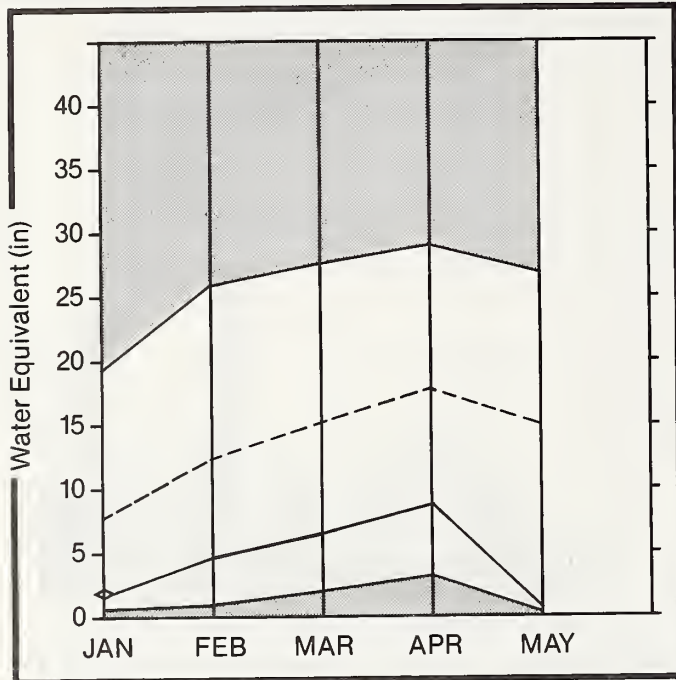
## WATER SUPPLY OUTLOOK:

Snow measurements normally taken near June 1 in the basin were cancelled since virtually the entire snowpack was depleted by May 15. May precipitation varied widely over the basin. Mountain SNOTEL precipitation stations reported near normal rainfall with the exception of Bennett Mountain near Mountain Home reporting only 22% of average and Cozy Cove near Deadwood Dam reporting 164% of average. Valley precipitation was generally above normal in the mountain valleys and below normal in the agricultural irrigated areas. Streamflows peaked near May 1, nearly 4 weeks earlier than normal. May streamflow volumes were 30 to 50% of normal and flows for the remainder of the season will be very low. Reservoirs are now being drafted to meet the increasing irrigation demands. Reservoirs on the Boise system report a net decrease since May 1. Typically these reservoirs fill in late May or early June. Well timed and above normal rainfall will be needed to avoid critical water shortages in some areas.



# Big Wood, Little Wood, Big Lost, and Little Lost River Basin

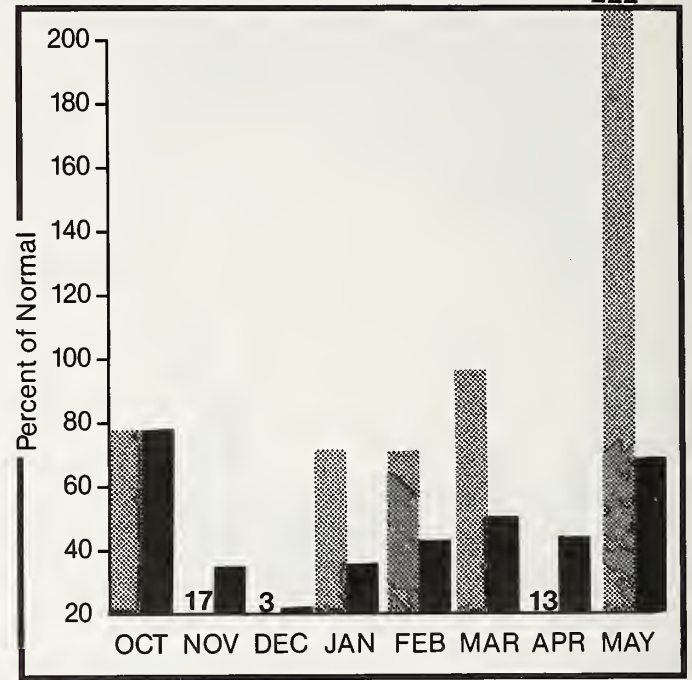
Mountain snowpack\* (inches)



\*Based on selected stations

Maximum ——— Average - - - -  
Minimum = = = Current ———

Precipitation\* (percent of normal)



\*Based on selected stations

Monthly precipitation (hatched bar) Year to date precipitation (solid black bar)

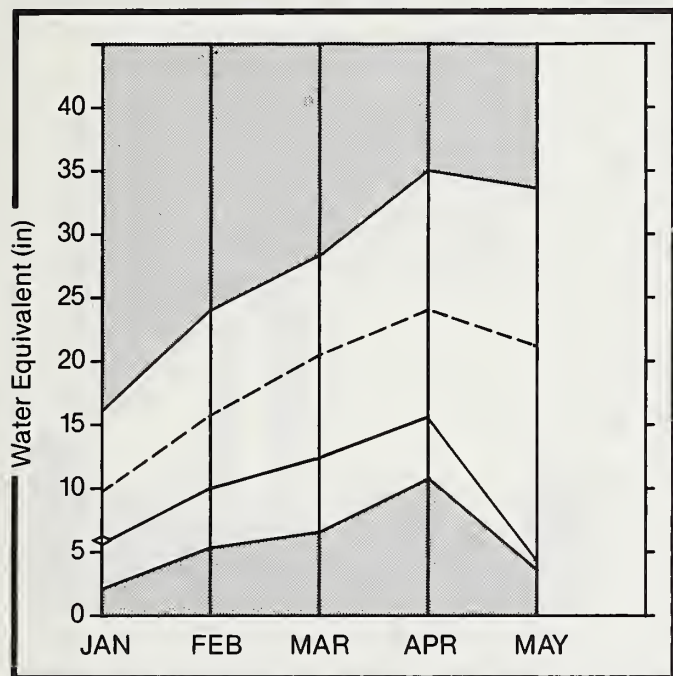
## WATER SUPPLY OUTLOOK:

Little or no snow remained in the basin by mid-May and snow measurements normally taken near June 1 were cancelled. Precipitation during May was well above normal with most of the rainfall coming in the last half of the month. The rain helped replenish the deficit soil moisture conditions and temporarily reduced irrigation demands, but provided little surface runoff. May streamflow volumes were less than half of normal and peak flows occurred near May 1, nearly a month earlier than normal. Reservoirs are being drafted to meet irrigation demands with Carey Valley, Little Wood, and Magic reservoirs all reporting a net decrease in available water since May 1. These reservoirs are expected to be empty or nearly empty by late summer. Mackay reservoir remained full on June 1. Streamflows will be very low for the remainder of the season and well timed, above average precipitation will be needed to avoid critical shortages.





# Willow Creek, Blackfoot, Upper Snake, and Portneuf River Basin

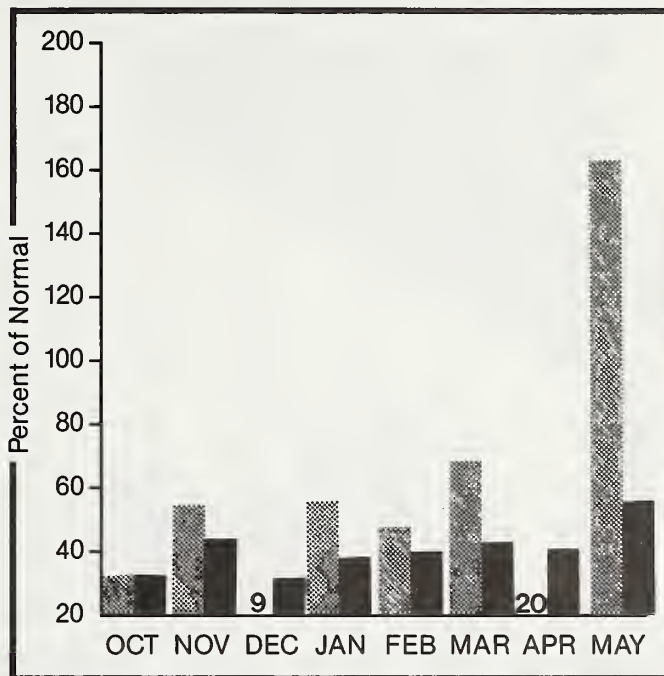
**Mountain snowpack\*** (inches)





\*Based on selected stations

Maximum  Average   
Minimum  Current 

**Precipitation\*** (percent of normal)



\*Based on selected stations

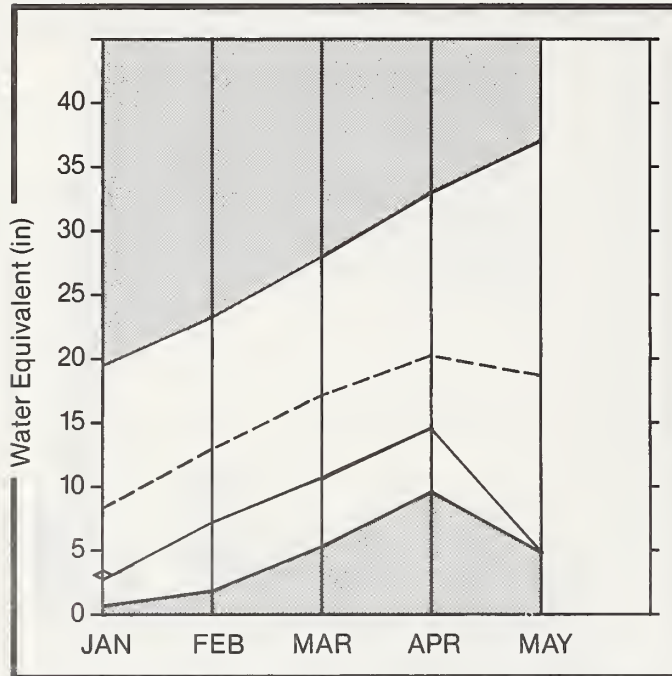
Monthly precipitation  Year to date precipitation 

## WATER SUPPLY OUTLOOK:


Snow measurements normally taken near June 1 were cancelled since virtually the entire snowpack was depleted by this date. Rainfall during May was well above normal in the mountainous areas, ranging from 150 to 250% of average, and near to slightly below normal in the valleys, ranging from 75 to 115% of average. The well above average precipitation provided much needed relief to dryland areas and helped replenish below normal soil moisture conditions. Some streams experienced flash flooding as a result of intense short duration thunderstorm activity. Streamflow snowmelt peaks occurred in early May, about 4 weeks earlier than usual. As a result, May flows were well below average and flows for the remainder of the season are expected to remain low. Most reservoirs are filled or nearly filled to capacity and water supplies should be adequate for most areas this season.

# Southside Snake River Basin

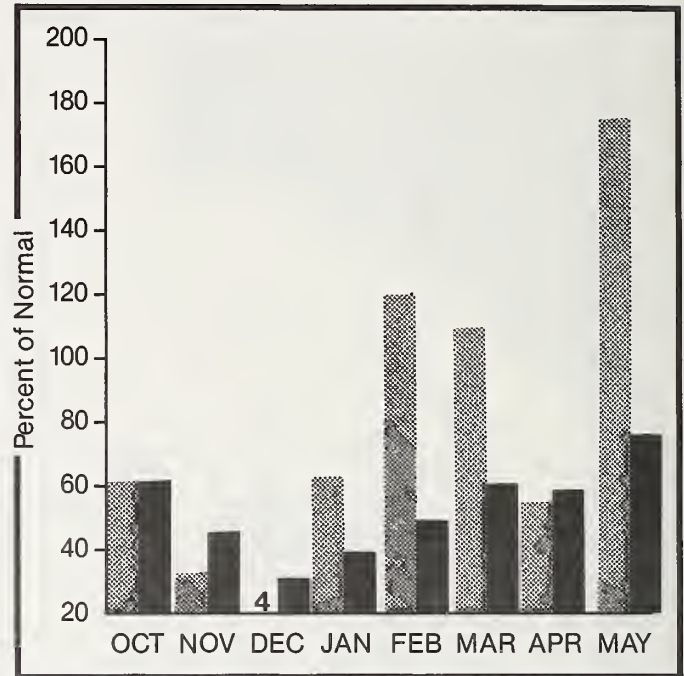
**Mountain snowpack\* (inches)**





\*Based on selected stations

Maximum  Average   
Minimum  Current 

**Precipitation\* (percent of normal)**



\*Based on selected stations

Monthly precipitation  Year to date precipitation 

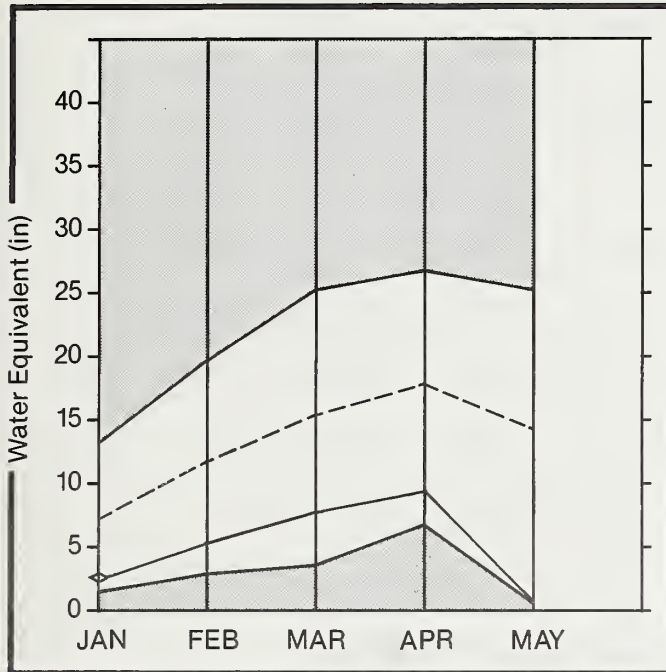
## WATER SUPPLY OUTLOOK:

Most winter snowpack in the basin was depleted by early May except in the higher elevations of the Jarbridge Mountains where snow remained on north facing slopes and protected areas until mid-May. Precipitation for May varied from slightly below normal in the Owyhee and Bruneau River drainages on the west end of the basin to well above normal over the eastern half of the basin. Heavy thunder shower activity produced localized flash flooding in areas south and east of Twin Falls and Burley, and provided some additional surface runoff into Salmon Falls and Oakley reservoirs. The much needed rainfall also helped replenish deficit soil moisture conditions in the basin and provided temporary relief to dryland areas.

For more information contact your local Soil Conservation Service office.

# Great Basin

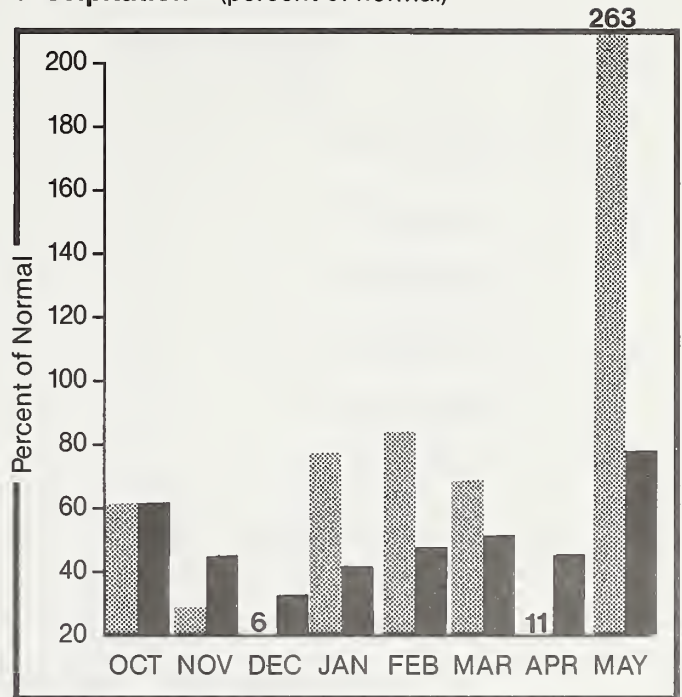
**Mountain snowpack\* (inches)**



\*Based on selected stations

Maximum ——— Average - - - - -  
Minimum ——— Current ◇ ———

**Precipitation\* (percent of normal)**



\*Based on selected stations

Monthly precipitation (hatched bar) Year to date precipitation (solid bar)

## WATER SUPPLY OUTLOOK:

May brought above normal precipitation to the basin for the first time since the water year began last October. Rainfall during May was well above normal with most valley and mountain SNOTEL stations reporting over 250% of normal accumulations. The much needed rainfall temporarily reduced irrigation demands and helped replenish the deficit soil moisture conditions -- providing relief to dryland areas. Streamflows returned to summer baseflow conditions in early May as the last of the winter's snowpack was depleted. Streams remained low during the month indicating that the heavy precipitation produced little surface runoff. Baseflows, however, should maintain somewhat better than previously expected with the improved soil moisture conditions. Water will remain in short supply for this season and well timed normal or above normal precipitation is needed to reduce demands.



# UPPER COLUMBIA RIVER BASIN

RESERVOIR STORAGE		(1000AF)		
RESERVOIR	USEABLE I CAPACITY I	** USEABLE STORAGE ** THIS YEAR	LAST YEAR	AVG.
HUNGRY HORSE	3451.0	3264.0	2230.0	2663.0
FLATHEAD LAKE	1791.0	1596.0	1568.0	1468.0
PEND OREILLE	1561.2	1405.4	1420.2	1278.5
NOXON RAPIDS	335.0	328.0	333.0	270.4
COEUR D'ALENE	291.2	280.2	219.8	353.9
PRIEST LAKE	97.7	99.8	71.8	123.5

# CLEARWATER AND SALMON RIVER BASIN

RESERVOIR STORAGE		(1000AF)		
RESERVOIR	USEABLE I CAPACITY I	** USEABLE STORAGE ** THIS YEAR	LAST YEAR	AVG.
DWORSHAK	3467.8	3389.0	3042.7	2987.3



# WEISER, PAYETTE AND BOISE RIVER BASIN

RESERVOIR STORAGE		(1000AF)		
RESERVOIR	USEABLE   CAPACITY  	** USEABLE STORAGE ** THIS YEAR	LAST YEAR	AVG.
MANN CREEK	11.3	9.6	11.3	10.8
CASCADE	703.2	629.5	483.0	548.7
DEADWOOD	162.0	142.6	138.6	136.2
ANDERSON RANCH	464.2	395.2	447.2	413.3
ARROWROCK	286.6	120.2	196.2	216.3
LUCKY PEAK	307.0	293.8	231.6	225.9
LAKE LOWELL (DEER FLAT)	177.0	139.5	167.6	159.0

# BIG WOOD, LITTLE WOOD, BIG LOST AND LITTLE LOST RIVER BASIN

RESERVOIR STORAGE		(1000AF)		
RESERVOIR	USEABLE   CAPACITY  	** USEABLE STORAGE ** THIS YEAR	LAST YEAR	AVG.
MAGIC	191.5	121.4	186.0	173.8
LITTLE WOOD	30.0	28.0	30.2	28.0
CAREY VALLEY	14.4	5.8	13.9	---
MACKAY	44.4	45.0	44.0	33.6

# WILLOW CREEK, BLACKFOOT, UPPER SNAKE AND PORTNEUF RIVER BASIN

RESERVOIR STORAGE		(1000AF)		
RESERVOIR	USEABLE I CAPACITY I	** USEABLE STORAGE ** THIS YEAR	LAST YEAR	AVG.
ISLAND PARK	127.6	136.0	133.5	134.4
GRASSY LAKE	15.2	15.2	14.0	13.5
JACKSON LAKE	624.4	284.2	93.9	567.9
PALISADES	1357.0	1352.2	652.3	993.9
AMERICAN FALLS	1700.0	1426.4	1606.4	1519.3
BROWNLEE	975.3	902.9	606.4	756.8
BLACKFOOT	NO REPORT			
HENRY'S LAKE	90.4	90.0	---	84.6
RIRIE	96.5	72.1	---	83.9

## SOUTHSIDE SNAKE RIVER BASIN

RESERVOIR STORAGE		(1000AF)		
RESERVOIR	USEABLE I CAPACITY I	** USEABLE STORAGE ** THIS YEAR	LAST YEAR	AVG.
OAKLEY	77.4	31.1	59.9	42.7
SALMON FALLS	182.6	88.4	156.5	94.9
OWYHEE	715.0	459.0	714.0	599.6

# GREAT BASIN

RESERVOIR STORAGE		(1000AF)		
RESERVOIR	USEABLE   CAPACITY  	** USEABLE STORAGE ** THIS YEAR	LAST YEAR	AVG.
BEAR LAKE	1421.0	1128.0	1216.2	1145.5
MONTPELIER CREEK	3.9	3.4	2.1	3.4

# SNOW DATA MEASUREMENTS

SNOW COURSE	ELEVATION	DATE	SNOW DEPTH	WATER CONTENT	LAST YEAR	AVERAGE 1961-85
COOL CREEK	6250	5/29/87	21	10.0	29.4	32.2
LOST LAKE	6110	5/29/87	15	7.4	23.4	44.7
SCHWEITZER BASIN	6090	5/28/87	19	10.9	13.1	25.1
SCHWEITZER RIDGE	6200	5/28/87	17	9.2	5.7	30.0
TOGWOTEE PASS	9580	6/01/87	12	4.4	35.1	25.8



# The Following Organizations Cooperate With The Soil Conservation Service In Snow Survey Work

**State** Idaho Department of Water Resources  
Soil and Water Conservation Districts of Idaho

**Federal** U.S. Department of Agriculture  
Forest Service  
U.S. Department of Army  
Corps of Engineers  
U.S. Department of Commerce  
NOAA, National Weather Service  
U.S. Department of Interior  
Bureau of Reclamation  
Geological Survey, Water Resources Division  
Shoshone-Bannock Tribal Council

**Local** Big Lost River Irrigation District  
Big Wood Irrigation Company  
Boise Project Board of Control  
Idaho Water District #01  
Lewiston Orchards Irrigation District  
Little Wood River Irrigation District  
North Board of Control — Owyhee Project  
Salmon Falls Irrigation Company  
South Board of Control — Owyhee Project

**Private** Cyprus Mining Company  
FMC Corporation  
Idaho Power Company  
Le Bois Resort  
Washington Water Power Company

Other organizations and individuals furnish information for the snow survey reports. Their cooperation is gratefully acknowledged.

UNITED STATES DEPARTMENT OF AGRICULTURE  
SOIL CONSERVATION SERVICE  
ROOM 345  
304 N. 8TH ST.  
BOISE, IDAHO 83702  
OFFICIAL BUSINESS  
PENALTY FOR PRIVATE USE, \$300

THIRD CLASS BULK RATE  
POSTAGE AND FEES PAID  
USDA - SCS  
PERMIT NO. G-267

**THIRD CLASS MAIL**

**Idaho  
Water Supply Outlook**

and

Federal — State — Private  
Cooperative Snow Surveys

DR A RANGO CHIEF HYDROLOGY LAB  
ROOM 139 BUILDING 007  
USDA-ARS - BARC-WEST  
BELTSVILLE MD 20705



SOIL CONSERVATION SERVICE